

REMARKS

Favorable reconsideration of the application is respectfully requested in light of the amendments and remarks herein.

Upon entry of this amendment, claims 1-10 will be pending. By this amendment claims 1 and 6 have been amended. No new matter has been added.

§103 Rejection of Claims 1-4 and 6-9

In Section 2 of the Office Action, the Examiner has rejected claims 1-4 and 6-9 under 35 U.S.C. §103(a) as being unpatentable over Taura (U.S. Patent No. 6,642,957) in view of Yamada (U.S. Patent No. 6,573,935), further in view of Van Rooy (U.S. Patent No. 6,657,659). Independent claims 1 and 6 have been amended to address the rejection.

In the Background section of the Specification, it was disclosed that “since the photosensors for pixels in the CCD are different in sensitivity from each other, there will exist a difference in amplitude between a G signal from a G pixel included in a horizontal line of R, G, R, G, ..., R and G color filters and a G signal from a G pixel included in a horizontal line of G, B, G, B, ..., G and B color filters. Therefore, in a single-chip color imaging apparatus, when a luminance signal is produced from color signals from pixels in each horizontal line, the above difference in sensitivity from one photosensor to the other will cause a difference in amplitude between luminance signals from the pixels in different horizontal lines and it will appear as a horizontal stripe-like noise in a monitoring image and captured image.” *Background of the Specification, page 2, line 13 – page 3, line 1.*

Thus, the above paragraph of the Background highlights the problem associated with difference in sensitivity from one photosensor to another that will cause a difference in amplitude

between luminance signals from the pixels in different horizontal lines.

To solve this problem, embodiments of the present invention provide a color imaging apparatus including a gain controlling means for controlling the amplitude difference between the luminance signals. For example, the structure of apparatus claim 1, as presented herein, includes:

“A color imaging apparatus comprising:

a solid-state image sensor having photosensors color-coded with three primary color filters formed like a matrix correspondingly to pixels of the solid-state image sensor, to provide three primary color signals acquired as captured image signals;

a four-channel signal detecting means for detecting, from the three primary color signals provided from the solid-state image sensor, an R signal acquired from R pixels in a horizontal line of R, G, R, G, ..., R and G color filters, a Gr signal acquired from the G pixels in the same horizontal line, a Gb signal acquired from G pixels in a horizontal line of G, B, G, B, ..., G and B color filters, and a B signal acquired from the B pixels in the same horizontal line;

a four-channel variable-gain amplifying means whose channels are controllable in gain independently of one another to amplify the R, Gr, Gb and B signals; and

a gain controlling means for controlling, based on an output from the signal detecting means, the gains of R and B channels of the variable-gain amplifying means so that the R and B signals amplified by the variable-gain amplifying means are equal in level for an achromatic color image, and said gain controlling means *controlling the gains of Gr and Gb channels of the variable-gain amplifying means so that the amplitude difference between the luminance signal for the horizontal line of R, G, R, G, ..., R and G color filters produced from the R and Gr signal*

and the luminance signal for the horizontal line of G, B, G, B, ..., G and B color filters produced from the B and Gr signal is substantially reduced."

Claim 1 (emphasis added)

Taura, Yamada, and Van Rooy, individually or in combination, fail to teach or suggest a color imaging apparatus including a gain controlling means for controlling the gains of Gr and Gb channels of the variable-gain amplifying means so that the amplitude difference between the luminance signal for the horizontal line of R, G, R, G, ..., R and G color filters produced from the R and Gr signal and the luminance signal for the horizontal line of G, B, G, B, ..., G and B color filters produced from the B and Gr signal is substantially reduced.

Based on the foregoing discussion, it is maintained claim 1 should be allowable over the combination of Taura, Yamada, and Van Rooy. Furthermore, since independent claim 6 closely parallel and include substantially similar limitations as independent claim 1, claim 6 should also be allowable over the combination of Taura, Yamada, and Van Rooy. Since claims 2-4 and 7-9 depend from claims 1 and 6, respectively, claims 2-4 and 7-9 should also be allowable over the combination of Taura, Yamada, and Van Rooy.

Accordingly, it is submitted that the Examiner's rejection of claims 1-4 and 6-9 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§103 Rejection of Claims 5 and 10

In Section 3 of the Office Action, the Examiner has rejected claims 5 and 10 under 35 U.S.C. §103(a) as being unpatentable over Taura in view of Yamada, further in view of Van Rooy, and further in view of Kim (U.S. Patent No. 6,597,935).